

METHOD AND SYSTEM FOR DYNAMICALLY OPERATING MEMORY IN A
POWER-SAVING ERROR CORRECTING MODE

ABSTRACT OF THE DISCLOSURE

A scrubbing controller used with a DRAM stores data in an error correcting code format. The system then uses a memory control state machine and associated timer to periodically cause the DRAM to read the error correcting codes. An ECC generator/checker in the scrubbing controller then detects any errors in the read error correcting codes, and generates corrected error correcting codes that are written to the DRAM. This scrubbing procedure, by reading error correcting codes from the DRAM, inherently refreshes memory cells in the DRAM. The error correcting codes are read at rate that may allow data errors to be generated, but these errors are corrected in the memory scrubbing procedure. However, the low rate at which the error correcting codes are read results in a substantial power saving compared to refreshing the memory cells at a higher rate needed to ensure that no data errors are generated.